Space Weather Forecast

Issued on Wednesday 20 November 2024 at 01:00 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Faster solar winds solar winds bring a likelihood of enhanced geomagnetic activity at times.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate during the past 24 hours, with a single Moderate-class flare observed at the turn of the UTC day from a sunspot region near the southwest limb. Otherwise, mostly background Common-class flares throughout the current UTC day.

There are currently nine sunspot regions on the visible disc, one of which is a new and currently unnumbered region emerging in the northwest. A sunspot near the southeast limb, is showing some magnetic complexity, although this remains difficult to analyse due to its viewing angle. The largest sunspot region remains in the far west, which will be rotating off the disc and around the western limb during the UTC day. No Earth-directed Coronal Mass Ejections (CMEs) were observed over the past 24 hours in available imagery.

Solar Wind / Geomagnetic Activity:

Solar winds were mostly at background levels, reaching between 340-400km/s, due to a weak and waning coronal hole fast wind influence. The magnetic field, was weak to moderate. The north-south component was mostly weak and negative (southwards) throughout the period. Geomagnetic activity was mostly Quiet (0-2Kp) with an Unsettled interval observed at 19/1800-2100 UTC.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate activity is expected, with a daily chance of Moderate flares and a persistent slight chance of isolated Strong flares.

Solar Wind / Geomagnetic Activity: No Earth-directed CMEs currently feature in the forecast.

Slow solar winds around 350-400km/s are expected during Day 1 (20 Nov) with an increasing risk of enhancement from coronal holes which are near the centre disc. As a result, winds are expected to increase to Slightly elevated with speeds 450-500km/s arriving towards the end of Day 2 (21 Nov) and into Day 3 (22 Nov), before gradually waning on Day 4 (23 Nov).

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Quiet to Unsettled (Kp0-3) conditions expected through much of the period. Activity probably increasing through Days 3 and 4 (21-22 Nov) becoming generally Unsettled to Active (Kp3-4) with a chance of G1 Minor Geomagnetic Storm intervals depending on the strength of any enhancement from the coronal holes. Gradually easing to become mostly Quiet to Unsettled on Day 4 (23 Nov) as coronal hole fast wind influences wane.

Energetic Particles / Solar Radiation: Solar radiation storms are not expected.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	20	20	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	Yes	50	50	50	50
Very Active	R3-R5 (X Class)	No	5	5	5	5

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Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	5	5	5	5
Very Active	**≥ S3 ***	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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